REMARKS

Claim Rejections – 35 USC §103

Claims 1, 2, 4, 10-16, 21, 31, 32, and 34-36 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,136,003 to Van Hoeck et al. in view of U.S. Patent Publication No. 2001/0020168 to Hermann et al. Additionally, claims 3 and 5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the Van Hoeck/Hermann combination in further view of U.S. Patent No. 6,238,396 to Lombardo, and claims 7, 8, 17, 18, 33, 37 and 38 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the Van Hoeck/Hermann combination in further view of U.S. Patent No. 5,980,523 to Jackson.

Claim Amendments

The Applicant has amended independent claim 1 to recite further features associated with the claimed invention. Support for the amendment to independent claim 1 is found, for example, on page 24, lines 6-7 and in Figures 27 and 28 of the as-filed application. Additionally, claims 34 and 35 have been amended to further clarify the arrangements set forth therein.

Arguments in Support of Patentability

The seminal case directed to the application of 35 U.S.C. §103 is Graham v. John Deere, 148 USPQ 459 (1966). From this case, four familiar factual inquiries have resulted. The first three, determining the scope and content of the prior art, ascertaining differences between the prior art and the claims at issue and resolving the level of ordinary skill in the pertinent art, are directed to the evaluation of prior art relative to the claims of the pending application. The fourth factual inquiry is directed to evaluating evidence of secondary considerations. (See, *Manual of Patent Examining Procedure* (MPEP) §2141). While performing this analysis, the cited references must be considered in their entirety, i.e., as a whole, including portions that would lead away from the claimed invention. (See, MPEP §2141.02 (citing W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983))). From these inquiries, the initial burden is on the Examiner to establish a *prima facie* case of obviousness.

Additionally, the Supreme Court in the recent decision of KSR International Co. v. Teleflex Inc., 550 U.S. 398, 82 USPQ2d 1385, 127 S.Ct 1727, 167 L.Ed.2d 705 (U.S. 2007), citing In Re Kahn, 441 F.3d 977, 988 (CA Fed. 2006), stated:

> [R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

KSR, 82 USPQ2d at 1396. For at least the following reasons, it is respectfully submitted that the pending claims are patentable over the cited references.

Independent Claim 1 and Dependent Claims 2-5, 7-8, 10-11, 12, 31 and 34-35

As indicated above, independent claim 1 currently stands rejected as being unpatentable over the Van Hoeck/Hermann combination. Independent claim 1 has been amended and now recites, among other features and elements, "a second hook . . . comprising a second internal surface having a curved portion including a raised ridge extending along said curved portion in a direction from the first end to the second end . . . ." The Office Action acknowledges that Van Hoeck fails to disclose a ridge extending along a curved portion. (See page 3; lines 3-4). However, the Office Action asserts that Hermann discloses this feature and that "[i]t would have been obvious . . . to modify the device of Hoeck et al. with a ridge extending along the curved portion . . . in order to diminish the friction between the rod and the hook." (See page 4, lines 1-6).

Van Hoeck discloses a connector 20 that includes a pair of oppositely positioned engaging portions 25, 26, each of which includes a receptacle 36 and a fixation surface 33. Hermann discloses a hook 12 that includes a hook element 16 and a shackle element 18. The shackle element 18 includes a groove with a groove bottom 18.1 and two lateral walls 18.2, 18.3. (See paragraph [0042]). Hermann also discloses that the shackle element 18 is formed by drilling a bore through a suitable piece of material, and then milling a slit extending from the bore to form the lateral walls 18.2, 18.3. (See paragraph [0045]). Additionally, between drilling the bore and milling the slit, a plurality of rills 19 are machined along the surface of the bore. (See paragraph [0046]). Likewise, as would be appreciated by those skilled in the art, the rills 19 are recessed within the internal surface of the bore. Indeed, Figure 2E of Hermann clearly illustrates this arrangement. Moreover, Hermann also indicates that the rills 19 eliminate or diminish friction between the shackle element 18 and the rod 10 (see e.g., paragraph [0046]), which further suggests and clarifies that the rills 19 are recessed within the internal surface of the

bore. Indeed, as would be appreciated by those skilled in the art, if the rills 19 were raised they would increase friction between the shackle element 18 and the rod 10. Similarly, Hermann teaches away from the arrangement now recited in independent claim 1. Accordingly, Hermann does not disclose a raised ridge, as now recited in independent claim 1, and the subject matter of independent claim 1, as whole, is not accounted for by the Van Hoeck/Hermann combination.

For at least the reasons set forth above, independent claim 1 is submitted to be patentable over the cited references. Accordingly, withdrawal of the rejection of independent claim 1 and allowance of the same is respectfully requested.

Each of claims 2-5, 7-8, 10-11, 12, 31 and 34-35 depends from independent base claim 1 or an intervening claim, and is patentable over the cited references for at least the reasons supporting the patentability of independent base claim 1, although further reasons support the patentability of these claims.

For example, claim 34 recites "wherein said curved portion of said second internal surface curves in a second direction extending obliquely to and intersecting said ridge." With regard to this arrangement, the Office Action provides an enlarged image of Figure 2E of Hermann and asserts that the rills 19 include first and second surfaces that converge at a ridge. It is respectfully submitted that this arrangement does not correspond to the arrangement specified in claim 34. Notably, the apparatus of claim 34 includes a single surface that curves in two directions. The groove bottom 18.1 of the shackle element 18 of Hermann is curved, at most, in one direction. Moreover, the first and second surfaces illustrated on page 4 of the Office Action are linear, and do not curve in any direction. Accordingly, the subject matter of claim 34 has not been accounted for, and claim 34 is patentable over the cited references for these additional reasons.

Independent Claim 13 and Dependent Claims 14-18, 21, 32 and 36

Independent claim 13 stands rejected as being unpatentable over the Van Hoeck/Hermann combination. Independent claim 13 is directed to an apparatus and recites, among other elements and features, "a second hook . . . comprising a second internal surface wherein the second internal surface curves both in a first direction from the shaft to the second end and in a second direction oblique to the first direction, wherein said curves in said first and

second directions are overlapping and intersecting . . . ." For reasons similar to those discussed above with regard to claim 34, the Van Hoeck/Hermann combination does not disclose an arrangement where an internal surface curves in a first direction from the shaft to the second end and in a second direction oblique to the first direction. Notably, the groove bottom 18.1 of the shackle element 18 of Hermann curves, at most, in a single direction. Moreover, the segments of the rills 19 pointed out on page 4 of the Office Action are linear, and are not curved in any direction. Similarly, Hermann does not disclose an internal surface that curves both in a first direction and in a second direction oblique to the first direction. Accordingly, the subject matter of independent claim 13, as a whole, has not been accounted for by the Van Hoeck/Hermann combination. Likewise, a *prima facie* case of obviousness has not been established with regard to independent claim13.

In view of the foregoing, independent claim 13 is submitted to be patentable over the cited references, and allowance of the same is respectfully requested.

Each of claims 14-18, 21, 32 and 36 depends from independent base claim 13 or an intervening claim and is patentable over the cited references for at least the reasons supporting the patentability of independent base claim 13, although further reasons support the patentability of these claims.

For example, each of claims 14-16 specifies an angular relationship between the first direction and the second direction in which the internal surface curves. The Office Action acknowledges that these features are not disclosed in the cited references, but asserts, citing *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), that discovering the optimum or workable ranges involves only routine skill in the art. (See Office Action, page 5). In discussing *In re Aller*, MPEP §2144.05 II states that "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In order for the discovery of optimum or workable ranges to be characterized as routine experimentation, MPEP §2144.05 II B instructs that "[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result." With respect to claims 14-16, the cited references do not disclose, nor has the Office Action provided, any evidence that adjusting the angles between the first direction and the second direction in which the internal surface curves is a result effective variable which would

affect the features set forth in these claims. Thus, the subject matter of claims 14-16 can not be characterized as the discovery of the optimum or workable ranges by routine experimentation. Accordingly, a *prima facie* case of obviousness has not been established with regard to claims 14-16, and it is respectfully submitted that these claims are patentable over the cited references.

As further examples, claim 17 recites "wherein the first spinal rod and the second spinal rod are positioned to lie non-parallel to each other", and claim 18 recites "wherein the first spinal rod and the second spinal rod are positioned to not lie in the same plane". For reasons similar to those discussed below with regard to independent claim 33, the arrangements specified in claims 17 and 18 have not been properly accounted for by the Office Action and are not disclosed in the cited references.

Independent Claim 33 and Dependent Claims 37 and 38

As indicated above, independent claim 33 stands rejected as being unpatentable over the Van Hoeck/Hermann/Jackson combination. Independent claim 33 is directed to an apparatus and recites, among other features and elements, "wherein said first elongated support rod is locked in contact with said first internal surface of said first hook portion, and said second elongated support rod is locked in contact with said saddle, said first elongated support rod and said second elongated support rod being non-parallel".

The Office Action acknowledges that the Van Hoeck/Hermann combination does not disclose this arrangement. However, the Office Action asserts that Jackson discloses a system where the spinal rods are positioned to lie non-parallel to each other and not in the same plane, and that it would have been obvious "to have constructed the device of Hoeck et al. . . . with the spinal rods being positioned to lie non-parallel and non-planar to one another". (See, page 6, lines 10-13). Jackson discloses a variety of transverse connectors "which can accommodate variations in the divergence and skew of the spinal rods". (See Abstract). For example, one connection system 1 includes a base connector 10 that has a cylindrical bore 13 and a boss 14 in communication with the bore 13. The system 1 also includes a hooked rotating connector 32 having an end that may be positioned in the bore 13 such that the connector 32 is rotationally and axially movable relative to the base connector 10. (See column 5, lines 4-12). Moreover, Jackson further specifies that the rotational and axial movement of the connector 32 relative to

the connector 10 facilitates use of the system 1 with spinal rods that are skewed relative to one another, as illustrated in Figures 4 and 25. (See column 5, lines 37-46).

Furthermore, as would be appreciated by those skilled in the art, the arrangement of the multi-component system 52 illustrated in Figure 2 of Jackson is necessary for its use with non-parallel spinal rods. Thus, in order to achieve the arrangement described in Jackson, where the spinal rods 2 and 3 are non-parallel or skewed relative to one another, the Van Hoeck device would have to be modified to include multiple components that are rotationally and/or axially movable relative to one another. In contrast to this arrangement, the apparatus of independent claim 33 includes a one-piece connector that includes no internal cavity. Similarly, if those skilled in the art modified the connector 20 of Van Hoeck in view of Jackson to facilitate its use with spinal rods that are positioned to lie non-parallel with each other, they would not arrive at the apparatus recited in independent claim 33. Instead, a multi-piece connector that includes at least one internal cavity would be provided. Accordingly, it is respectfully submitted that the apparatus of independent claim 33 is distinct from the arrangement provided by the Van Hoeck/Hermann/Jackson combination. Likewise, the subject matter of independent claim 33, as a whole, has not been accounted for, and a *prima facie* case of obviousness been established with regard to independent claim 33.

In view of the foregoing, independent claim 33 is submitted to be patentable over the cited references, and allowance of same is respectfully requested.

Each of claims 37 and 38 depends from independent base claim 33 or an intervening claim and is patentable over the cited combination of references for at least the reasons supporting the patentability of independent base claim 33, although further reasons support the patentability of these claims. For example, claim 37 recites subject matter similar to that recited in independent claim 13 and is submitted to be patentable for reasons similar to those discussed above with regard to independent claim 13.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance with pending claims 1-5, 7-8, 10-18, 21 and 31-38. Reconsideration of the present application is respectfully requested. Timely action towards a Notice of Allowance is hereby solicited. The Examiner is encouraged to contact the undersigned by telephone to resolve any outstanding matters concerning the present application.

Respectfully submitted,

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